Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter

Respiratory protection during the COVID-19 pandemic – the evidence shows it works: Author's response to Mandal et al., 2020.

In response to the letter by Mandal et al., 2020, we note three main points made by the authors. Firstly, they believe that masks may be sufficient for healthcare workers; secondly, that wearing a mask may reduce compliance with other hygiene measures and result in increased spread of COVID-19; and that re-use of disposable products may be unsafe; and thirdly that universal face mask use in the community may be beneficial.

The purpose of our systematic review (MacIntyre and Chughtai, 2020) was to evaluate the available data from randomised clinical trials (RCTs) for other respiratory viruses, given there are no RCTs yet published specific to COVID-19, and it may not be ethical to do such RCTs in the midst of a pandemic, when evidence of protection of respirators is available and where health care workers are dying of COVID-19. (CDC COVID-19 Response Team 2020; Godlee 2020; Li et al., 2020)

A recent meta-analysis of mask use for the beta-coronaviruses SARS, MERS CoV and SARS-CoV-2 confirmed that N95 respirators (96% protection) are more effective than surgical masks (67% protection). (Chu et al., 2020) This is the best current evidence, and healthcare workers should be afforded the best available protection. (MacIntyre and Wang 2020). Whilst surgical masks do provide protection, and some health workers may be forced to wear them while working with COVID-19 patients during shortages, the precautionary principle should be used (MacIntyre et al., 2014) and the best available protection provided.

The authors also cite Leung et al., as evidence of efficacy of surgical masks. We included this study in our review of masks as source control, and need to clarify that the Leung study is evidence of efficacy of source control (wearing of a mask by a sick person), not of protection of well people.(Leung et al., 2020)

Health workers are not disposable assets, and replacing those who are ill, quarantined or dead cannot be done by scaling up production as we can for drugs, ventilators, masks or respirators. From the perspective of the occupational health and safety of health workers and also of maintaining the capacity of the health workforce, it is unreasonable to expect them to work in substandard personal protective equipment. Countries should take responsibility for scaling up procurement or manufacturing of disposable respirators, or look at alternatives like re-usable elastomeric respirators for health workers. (Greenhalgh et al., 2020, MacIntyre and Wang 2020) This is not a difficult or expensive proposition compared to other investments made by governments, most of whom have failed to adequately stockpile for a pandemic. It requires political will and recognition of the importance of protecting health workers during a pandemic, which will never change if we continue to accept or advocate for lesser protection for health workers. Cloth masks are not a suitable option for health workers. The only RCT of cloth masks published at the time of the pandemic showed a higher risk of respiratory infection for health workers using a cloth mask. (MacIntyre et al., 2015) However, these findings are specific for the 2-layered cotton mask used in the trial, and do not preclude the design of a safer cloth mask for use by community members, who face a lower risk than health workers. (MacIntyre 2020a; MacIntyre 2020b). We agree there is little evidence on the safety of decontamination methods for re-use of disposable products, but this was not a focus of our review.

On the point that wearing a mask or respirator will encourage risky behavior and actually increase infection risk, this is not supported by any evidence. In fact, the best available real-world evidence shows exactly the opposite – that masks and respirators offer significant protection in both health care and community settings. (Chu et al., 2020) The same type of non-evidence-based arguments against accepted public health measures, such as that "HPV vaccine will encourage young people to become promiscuous" have also been proven wrong. (Brouwer et al., 2019) Health agencies should avoid using non-evidence based arguments against a cheap, low risk and effective intervention such as a mask or respirator in the midst of the worst pandemic of our lifetimes – such negative and inconsistent messaging does not add to clarity, but creates more confusion and loss of trust in health agencies. (Chan et al., 2020) Instead of presenting the few available non-pharmaceutical interventions against COVID-19 as competing options, it would be of best if health agencies provide clear and positive guidance to community members of wearing masks and the principles of good design of a homemade mask. We agree that universal face mask use is a sensible and likely effective policy in settings of high transmission or potential transmission.

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